User Manual

SR500A

DC/DC Converter

Optional V/I meter shown

Z367

Model Codes:

SR500A	**= Standard**
SR500D	**= Standard with alarms**
SR500L	**= 'D' version with high volts alarm (not available for >48VDC output versions)**

Safety

The user is responsible for ensuring that input and output wiring segregation complies with local standards and that in the use of the equipment, access is confined to operators and service personnel. A low resistance earth connection is essential to ensure safety and additionally, satisfactory EMI suppression (see below).

HAZARDOUS VOLTAGES EXIST WITHIN A POWER SUPPLY ENCLOSURE AND ANY REPAIRS MUST BE CARRIED OUT BY A QUALIFIED SERVICEPERSON.

Electrical Strength Tests

Components within the power supply responsible for providing the safety barrier between input and output are constructed to provide electrical isolation as required by the relevant standard. However EMI filtering components could be damaged as result of excessively long high voltage tests between input, output and ground. Please contact our technicians for advice regarding electric strength tests.

Earth Leakage

The EMI suppression circuits causes earth leakage currents which may be to the maximum allowable of 3.5mA.

Ventilation

High operating temperature is a major cause of power supply failures, for example it has been well documented that a 10^{o}C rise in the operating temperature of a component will halve its expected life. Therefore always ensure that there is adequate ventilation for the equipment. Batteries and cooling fans also suffer shortened lifetimes if subjected to high ambient temperatures - both should be included in a routine maintenance schedule to check for signs of reduced efficiency.

Water / Dust

Every effort must be made in the installation to minimise the risk of ingress of water or dust. Water will almost always cause instant failure. The effects of dust are slower in causing failure of electronic equipment but all electrical equipment should be cleaned free of any dust accumulation at regular intervals. This is particularly important where internal fans are fitted.

Electromagnetic Interference (EMI)

Switching power supplies and converters inherently generate electrical noise. All wiring should be as short as practicable and segregated from all equipment wiring which is sensitive to EMI. Residual noise can be reduced by looping DC wiring through ferrite cable sleeves. These are most effective as close to the power supply as possible and as many turns of the wire taken through the core (+ and - in the same direction) as the core will accommodate.

Fuse ratings

Check that the wiring and fuses or MCBs match the rating of the PSU or converter. Adequate fuse protection of battery circuits is very important owing to the large potential currents available from batteries.

Connection polarity

It is critical to check the polarity carefully when connecting DC power supplies and chargers to equipment. Boost chargers and some float chargers usuall have reverse polarity protection (RPP), which can be electronic (non-destructive) or by an internal fuse which needs to be replaced if a battery is connected in reverse.

Glossary of terms used in our user manuals

PSU = power supply unit

BCT = battery condition test

ECB = electronic circuit breaker

ELVD = electronic low voltage disconnect

RPP = reverse polarity protection

EMI = electromagnetic interference

SNMP = Simple Network Management Protocol

LAN = local area network

DOD = depth of discharge

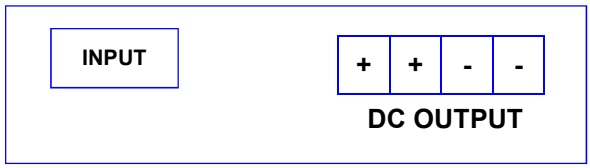
1. INTRODUCTION

The **SR500A** version described in this user manual is a DC/DC converter suitable for 110VDC input.

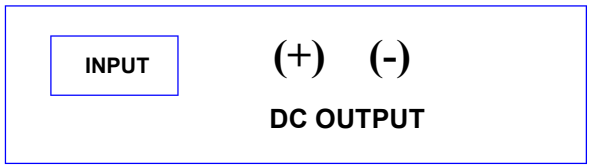
2. CONNECTIONS

If used as a float charger always connect the positive output of the power supply to the positive terminal of the battery. The charger may be permanently connected to float charge lead acid batteries but it is essential to periodically check the electrolyte level of flooded cells as there is always some evaporation.
Where screw/plug in terminals are fitted on the 24V model, there are two terminals provided for each polarity and both terminals must be used. This is to ensure that the current rating of the terminal block is not exceeded.

CONNECTION LAYOUT



Screw Conn. Output



Stud Conn. Output

3. LED INDICATION CODES

3.1 -A Standard version

*1 **POWER OK** LED indicates DC present on output terminals (either from PSU or battery, if connected)

MODE	LED INDICATION	
	POWER OK*1	**STANDBY**
DC PRESENT	ON	OFF
DC ABSENT	OFF	OFF
STANDBY	As above	ON

3.2 -D Alarm version

MODE	LED INDICATION		
	DC OK*2	**POWER OK*3**	**STANDBY**
NORMAL	ON	ON	OFF
DC LOW*4	OFF	ON	OFF
STANDBY	As above	OFF	ON

*2 **DC OK** LED indicates DC output is present, either from converter or battery (if connected)
*3 **POWER OK** LED indicates input power on (unless there is a short circuit on the output)
*4 **DC LOW** settings as in para. 3.3

3.3. -L version (with DC high alarm)

DC OK LED: *Slow flash:* ***DC LOW Settings***: **PSU:** 0.83 xVnom. **Charger:** 1.83V/cell
Fast flash: ***DC HIGH Settings:*** **PSU:** 1.2 x Vnom **Charger:** 2.5V/cell

4. ALARM TERMINAL LAYOUT (for -D & -L*[5] versions):

DC HIGH *[5]			MAINS FAIL			DC OK			FG
COM	NC	NO	COM	NC	NO	COM	NC	NO	

Relay contacts shown in **de-energised** state (ie. when there is a fault condition).
Alarm relays are **energised** when power supply is operating normally.

*[5] No **DC HIGH** alarm relay fitted on >48VDC versions, eg. **SR500L92** (108VDC output)

5. FG (Frame Ground)

Where provided, this terminal provides a connection to the metal case for an earthing point.

6. STANDBY FUNCTION

Pushing the **STANDBY** button turns the output of the power supply off. If there is a battery connected the **DC OK** LED remains on even though the power supply is turned off.

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SR500A

DC/DC converter (incl. SR500D, SR500L)

Optional internal V/I meter shown

- **Isolated input to output**
- **Designed & built to industrial standards**
- **Standalone - bench top or fixed mounting, optional rack mount (2U x 19")**
- **Front panel controls & indication**
- **Conservative design for long life**
- **Precise voltage control**
- **Optional relay alarm outputs**
- **Optional communications port: RS232, RS485 or Ethernet, protocols available: Modbus, SNMP or ASCII code**

Z367

♦ 24 Month Warranty

SPECIFICATIONS

All specifications are typical at nominal input, full load and at 20°C unless otherwise stated.

ELECTRICAL

Input	88 - 135VDC
Fusing	Input fuse
Overload protection	Primary current limit, external output fuse must be fitted for short circuit protection
Isolation	1KV DC input - output / earth
Output over voltage	Output limited to 130% Vnom.
Efficiency	≥ 85%
Inrush current	Soft start circuit
Output power	500W
Output voltage	13.8,24,30,36,48,96,108,120VDC
Line regulation	<0.2% over input range
Load regulation	<0.4% open circuit to 100% load
Noise	<1%
Drift	0.03% / °C
Hold-up time	15 - 20 ms
Thermal protection	Yes, self resetting

STANDARDS

EMI	To CISPR 22 / EN55022 class A, C-tick
Safety	To IEC950 / EN60950 / AS/NZS3260

ENVIRONMENTAL

Operating temperature	0 to + 50 °C ambient at full load De-rate linearly >50 °C to no load @ 70 °C
Storage temperature	-10 to 85 °C ambient
Humidity	0 - 95% relative humidity non-condensing
Cooling	Fan cooled

PHYSICAL

Input connector	Screw terminals
Output connector	M8 brass stud or plug in/screw terminal block
Alarm connectors (opt)	Plug-in screw terminal block
Enclosure	Powder coated steel
Dimensions	225W x 70H x 304D mm (excl. terminals)
Weight	4.3 Kg
Indication LEDs	**Standard:** Power OK, Standby **With alarms:** DC OK, Power OK, Standby
Standby switch	Turns off DC output

OPTIONS

Alarms - SR500D..	• **Input fail** (or converter in standby mode) • **DC low** (set at 83% V out)
- SR500L..	As **SR500D..** + DC HIGH alarm
	• **Earth fault** using external alarm card
Alarm contacts	C - NO - NC changeover rated 1A /50V DC, 32VAC
Communications Port	Choice of RS485, RS232, ethernet (SNMP or ASCII) Available only on **SR500L…** models
Internal V/I meter	Add code: **+INT-METER**
Output fuse	Fitted on rear panel

ACCESSORIES SUPPLIED

Mounting feet together with screws
Mating screw-terminal plug for alarm outputs
Crimp lugs for stud terminal versions
DC screw terminal plug-in connector for **'X'** version

Specifications are subject to change without prior notice.

6/09/12

PARALLEL CONNECTION

Two or more **SR500D or SR500L** converters may be connected in parallel for increased power with or without diodes, or N+1 redundancy with external diodes as shown below. It is recommended that the wiring from each unit to the load is kept identical for equal power sharing particularly when diodes are not used.

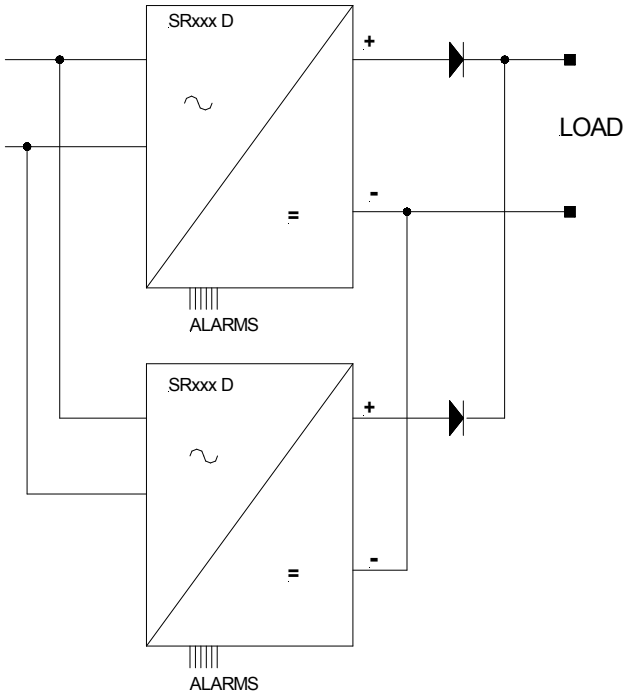

Fig. 1: Two SR500 D with external diodes

Notes

TERMS OF WARRANTY

Innovative Energies Ltd warrants its power supplies for 24 months (two years) from date of shipment against material and workmanship defects.

Innovative Energies' liability under this warranty is limited to the replacement or repair of the defective product as long as the product has not been damaged through misapplication, negligence, or unauthorized modification or repair.

Thank you for purchasing from Innovative Energies.

We trust your power supply will exceed your expectations and perform for years to follow.

Sincerely,
The Innovative Energies team.

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